

In the Claims:

Please amend the claims as follows:

1-21. (Canceled)

22. (New) A chemical mechanical polishing apparatus to polish a substrate, comprising:

a platen to support a polishing pad, the platen rotatable about an axis, the platen including a plurality of optical apertures positioned at different angular positions about the axis;

a carrier head to hold a substrate against the polishing pad;

a plurality of optical systems located in the platen, each of the plurality of optical systems including a light source to generate a light beam and direct the light beam through an associated one of the plurality of optical apertures, and a sensor to measure light from the light beam that is reflected from the substrate to generate an intensity signal; and

a processor to receive the intensity signal and determine a polishing endpoint.

23. (New) The apparatus of claim 22, wherein the plurality of optical systems include a first optical system having a first light source to generate a first light beam and a second sensor to measure light from the first light beam that is reflected from the substrate to generate a first intensity signal, and a second optical system having a second light source to generate a second light beam and a second sensor to measure light from the second light beam that is reflected from the substrate to generate a second intensity.

24. (New) The apparatus of claim 23, wherein the second light beam has a second effective wavelength that differs from the first effective wavelength.

25. (New) The apparatus of claim 24, wherein the first light beam and the second light beam have different wavelengths.

26. (New) The apparatus of claim 24, wherein the first optical system is an off-axis optical system and the second optical system is a normal-axis optical system.

27. (New) The apparatus of claim 21, wherein the plurality of optical apertures are spaced evenly about the axis.

28. (New) The apparatus of claim 27, wherein the platen includes exactly two optical apertures.

29. (New) The apparatus of claim 21, further comprising a polishing pad supported on the platen, the polishing pad having a plurality of windows, each of the plurality of windows aligned with an associated one of the plurality of optical apertures in the platen.

30. (New) The apparatus of claim 21, wherein at least one light beam has a wavelength of about 300-400 nm.

31. (New) A polishing pad, comprising:
a circular polishing layer having a polishing surface and a center;
a plurality of solid light-transmitting windows formed in the polishing layer, the windows positioned at different angular positions about the center.

32. (New) The polishing pad of claim 31, wherein the windows are generally rectangular.

33. (New) The polishing pad of claim 31, wherein the windows are spaced evenly around the center.

34. (New) The polishing pad of claim 31, wherein the polishing pad includes exactly two windows.

35. (New) The polishing pad of claim 31, further comprising a backing layer.

36. (New) A method of endpoint detection during polishing of a substrate, comprising:

polishing a substrate with a polishing pad that includes a circular polishing layer having a polishing surface and a center and a plurality of solid light-transmitting windows formed in the polishing layer, the windows positioned at different angular positions about the center;

transmitting a plurality of light beams through associated ones of the plurality of windows to a surface of the substrate; and

receiving reflections of said light beams from the substrate and passing through windows.

37. (New) The method of claim 36, wherein the plurality of windows alternately provide a view of the substrate.